

2015 HypsIRI Science and Applications Workshop

NASA Decadal Survey Mission
13-15 October 2015

Beckman Institute Auditorium (BIA)
California Institute of Technology
1200 E California Blvd, Pasadena, CA 91125

AGENDA v. Oct 13, 2015

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hypsiri.jpl.nasa.gov for conference info (incl lodging, directions)*

TUESDAY, October 13, 2015

| | Time | Title | Speakers |
|----------------------------------|------------------|---|--|
| | 8:00 AM | Registration Opens | |
| | 8:45 AM | Welcome and Objectives of the HypsIRI Science and Applications Workshop | Woody Turner |
| | 9:00 AM | Status of the HypsIRI Mission Concept and Level 1 Requirements | Robert Green, Simon Hook, Betsy Middleton |
| | 9:15 AM | Report on the 2015 HypsIRI Data Products Symposium | Betsy Middleton, Dan Mandl, Steve Ungar |
| Technology | 9:30 AM | Onboard instrument processing demonstrations on EO-1 | Steve Chien |
| | 9:45 AM | Flexible Field Programmable Gate Arrays Circuits for the IPM | Dan Mandl |
| | 10:00 AM | Small sat compatible HypsIRI-TIR free flyer (60m spatial sampling with a 4 day revisit) | Bill Johnson |
| | 10:15 AM | Design of a LandSat swath VSWIR-Dyson Imaging Spectrometer with 185 km swath and 30 m ground sampling | Pantazis Mouroulis |
| | 10:30 AM | Automated field spectroscopy systems for collecting continuous measurements of radiance/reflectance in support of hyperspectral satellite missions | Sergio Cogliati |
| | 10:45 AM | Break/Picture | |
| Thermal / Volcanoes and Wildfire | 11:15 AM | Understanding basaltic volcanic processes by remote measuring links between vegetation health and extent and volcanic gas and thermal emissions using HypsIRI-like VSWIR and TIR data | Chad Deering |
| | 11:30 AM | Quantifying volcanic processes and mitigating their hazards with HypsIRI data | Michael Ramsey |
| | 11:45 AM | Remote Sensing of Mono Basin and Long Valley Caldera | Neil Pearson |
| | 12:00 PM | Preparing for the Use of HypsIRI to Monitor the Impact of Volcanic Plumes on Air Quality | Vince Realmuto |
| | 12:15 PM | Synergistic use of AVIRIS, LiDAR, and MASTER - 2014 CA King Megafire | E. Natasha Stavros |
| | 12:30 PM | Lunch | |
| Breakout Sessions | 1:30 PM | Breakout Sessions (4 concurrent) | Lead / Co-Lead |
| White Papers for Decadal Survey | Lead 1 (BIA) | Aquatic Studies | Kevin Turpie / Eric Hochberg |
| | Lead 2 (121) | ET / Agriculture / Water Resources | Josh Fisher / Johan Perret or Christine Lee |
| | Lead 3 (115) | Volcanoes | Rob Wright / Vince Realmuto |
| | Lead 4 (Outside) | Wildfires / Terrestrial Disturbance | Sander Veraverbeke / Dar Roberts and Natasha Stavros |
| | 3:30 PM | Break | |
| Aquatic | 3:45 PM | HypsIRI Aquatic Sciences Group Report | Kevin Turpie |
| | 4:00 PM | CORAL: COReal Reef Airborne Laboratory | Eric Hochberg |
| | 4:15 PM | Assessing simulated HypsIRI imagery for detecting and quantifying coral reef coverage and water quality using spectral inversion and deconvolution methods | Steven Ackleson |
| | 4:30 PM | Vicarious calibration and visible derivative spectroscopy to estimate the composition of the 2015 CyanoHAB in Sandusky Bay, Lake Erie | Jeff Luvall for Joe Ortiz |
| | 4:45 PM | Potential of the Hyperspectral Infrared Imager (HypsIRI) mission for monitoring the physiological condition of giant kelp forests | Tom Bell |
| | 5:00 PM | Using HypsIRI at the Land/Sea Interface to Identify Phytoplankton Functional Types | Liane Guild |
| | 5:15 PM | Closing / Adjourn | |

WEDNESDAY, October 14, 2015

| Time | Title | Speakers |
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| 8:00 AM | Registration Open | |
| 8:40 AM | Summary of the Western US HypsIRI Airborne Campaign | Ian McCubbin |

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| | 8:55 AM | Introduction to the Volcano and Coral Reef HypsIRI Airborne Campaign | Ian McCubbin |
| | 9:00 AM | Update on the EnMAP Mission | André Hollstein |
| | 9:15 AM | Update on AVIRIS-NG Asian Environments Campaign in relation to | Robert Green |
| Terrestrial | 9:30 AM | Results from the Carnegie Airborne Observatory (i) | Greg Asner |
| | 9:45 AM | Results from the Carnegie Airborne Observatory (ii) | Greg Asner |
| | 10:00 AM | Imaging spectroscopy of canopy nutrients in complex Amazonian landscapes | Dana Chadwick, Greg Asner |
| | 10:15 AM | Break | |
| | 10:30 AM | Gaussian Processes and Self-Organizing Maps for Possibilistic Robust AMbiguity (PRAM) Classification and Regression with Spectral Data | Paul Gader |
| | 10:45 AM | Assessing Sub-pixel Vegetation Structure from Imaging Spectroscopy Data via Simulation | Wei Yao |
| | 11:00 AM | Identification of plant functional types by characterization of canopy chemistry using an automated advanced canopy radiative transfer model | Karine Adeline, Susan Ustin |
| | 11:15 AM | Combined hyperspectral VSWIR and broadband thermal infrared analysis of vegetation-substrate mixtures in a mixed natural and anthropogenic landscape | Dar Roberts |
| | 11:30 AM | Ecosystem Physiology | Phil Townsend |
| | 11:45 AM | Assessing Biodiversity and Productivity with Imaging Spectrometry | John Gamon |
| Breakout Sessions | 12:00 PM | Lunch and Poster Session | |
| | 1:00 PM | Breakout Sessions (3-4 concurrent) | Lead / Co-Lead |
| White Papers for Decadal Survey | Lead 1 (121) | Aquatic Benthic Habitats | Eric Hochberg / Jeff Luval |
| | Lead 2 (228) | Surface Composition | Wendy Calvin and Glynn Hulley / Neil Pearson, Gwen Davies, Nabin Malakar |
| | Lead 3 (Outside) | Methane/Atmosphere | Christian Frankenberg / Andrew Thorpe |
| | Lead 4 | Open | Open |
| Terrestrial | 3:00 PM | Present white paper outlines | |
| | 3:30 PM | Comparison of Hyperspectral and Multispectral Satellites for Discriminating Land Cover in Northern California | Matthew Clark |
| | 3:45 PM | Increases in the Climate Change Adaption Effectiveness and Availability of Vegetation across a Coastal to Desert Climate Gradient in Metropolitan Los Angeles, CA, USA | Amin Tayyebi |
| | 4:00 PM | Study on hyperspectral and polarimetric signatures of vegetation | Yan Lei |
| | 4:15 PM | Using imaging spectrometry measurements of ecosystem composition to constrain terrestrial biosphere model predictions of carbon, water and energy fluxes | Paul Moorcroft |
| | 4:30 PM | Mapping Plant Functional Types with AVIRIS imaging spectrometry measurements | Stacy Bogan |
| | 4:45 PM | Mapping land surface radiation and energy budget from the AVIRIS and MASTER data | Dongdong Wang |
| | 5:00 PM | Closing/Adjourn | |
| THURSDAY, October 15, 2015 | | | |
| | Time | Title | Speakers |
| Atmosphere and Methane | 8:30 AM | An algorithm for simultaneous inversion of aerosol properties and surface reflectance from hyperspectral remote sensing data | Jun Wang |
| | 8:45 AM | High resolution mapping of methane emissions using the next generation Airborne Visible Infrared Imaging Spectrometer (AVIRIS-NG) | Andrew Thorpe |
| Cryosphere | 9:00 AM | Spatial and temporal variability of optical snow properties in the Sierra Nevada and Rocky Mountains derived from AVIRIS data | Felix Seidel |
| | 9:15 AM | Snow and Ice radiative forcing and albedo with imaging spectroscopy measurements | Tom Painter |
| ECOSTRESS | 9:30 AM | Status of the ECOSTRESS ISS Mission in relation to HypsIRI | Simon Hook |
| | 9:45 AM | ECOSTRESS and EARTH University Partnerships | Johan Perret |
| | 10:00 AM | ECOSTRESS Science Objectives | Josh Fisher |
| | 10:15 AM | ECOSTRESS simulated L2 Thermal Infrared Products from MASTER | Nabin Malakar and Glynn |
| | 10:30 AM | ECOSTRESS Instrument overview and focal plane testing results | Bill Johnson |
| | 10:45 AM | Break | |
| Surface Composition/Geology | 11:00 AM | Effect of Spatial Resolution for Characterizing Soil Properties from Imaging Spectrometer Data - Dutta Debsunder | Dutta Dubsunder |
| | 11:15 AM | Applications of HypsIRI preparatory data for environmental monitoring of acid mine drainage | Gwen Davies |
| | 11:30 AM | Advances in Mineral Dust Source Composition Measurement with Imaging Spectroscopy Demonstrated at the Salton Sea, CA | Robert Green |

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| | 11:45 AM | Relative Dating of Landslide, Alluvial Fan and Debris Flow Deposits In the Salton Sea Basin Using Mineral Maps Derived From HypsIRI Preparatory Imagery, Field Spectral Data and Observations | Bernard Hubbard |
| | 12:00 PM | Utilizing HypsIRI data for geological exploration applications: A southern California case study | Wendy Calvin |
| Applied Sciences | 12:15 PM | Working Lunch / Applications Breakout (Early Adopters for HypsIRI) | Christine Lee for Vanessa Escobar |
| Breakout Sessions White Papers for Decadal Survey | 1:00 PM | Breakout Sessions (4 concurrent) | Lead / Co-Lead |
| | Lead 1 (BIA) | Terrestrial Ecology / Plant Physiology | Phil Townsend / John Gamon |
| | Lead 2 (115) | Human Health / Water Quality | Jeff Luvall / Eric Hochberg |
| | Lead 3 (121) | Cryosphere | Tom Painter / Alex Gardner |
| | 3:00 PM | Break | |
| | 3:15 PM | Imaging spectroscopy pushing to new frontiers with Tetracorder 5 | Rob Green for Roger Clark |
| | 3:30 PM | Incorporating Spatial Information in Non-convex Hyperspectral Unmixing | Miguel Velez-Reyes |
| | 3:45PM | Discussion: Status of HypsIRI Requirements and Inputs to the Next Decadal Survey and 2016 plans | Woody Turner, Simon Hook, Rob Green, Betsy Middleton |
| | 4:30 PM | Closing / Adjourn | |

Poster Session Wednesday, October 14, 2015

| Time | Title | Presenter |
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| 12:00 PM | EO-1 Hyperion Spectral Time Series, Tracing the Seasonal Dynamics in Ecosystem Function | Petya Campbell |
| | ISS as a Platform for Optical Remote Sensing: A Case Study Using HICO | Karl Huemrich |
| | Overview of KOMPSAT IR Sensor and Expected Data Applications | Yongseung Kim |
| | Installation and Operation Plan of Hyperspectral Imager Suite | Tsuneo Matsunaga |
| | LP DAAC Surface Data Type Comparison | Stacie Doman Bennett |
| | HypsIRI Preparatory Studies of Aeolian Deposits around the Salton Sea Basin of Southern California | Donald Hooper |
| | Geologic swath map of the Lavic Lake fault from remote sensing | Ryan Witkosky |
| | Understanding basaltic volcanic processes by remotely measuring the links between vegetation health and extent, and volcanic gas and thermal emissions using HypsIRI-like VSWIR and TIR data | Chad Deering |
| | Canopy Structural types discrimination in the Sierra National Forest in central California | Margarita Huesca Martinez |
| | A Hyperspectral thermal emission spectrometer (HyTES) for NASA ER-2: readiness and expected performance | William Johnson |
| | The Hyperspectral Thermal Emission Spectrometer for NASA ER-2: Readiness and Existing Performance | Jonathan Mihaly |
| | Relationships between urban land surface temperature, air temperature, and NDVI across a coastal desert climate gradient | Sheri Shiflett |
| | Simulated ECOSTRESS L2 Products from the HypsIRI Airborne Campaign | Nabin Malakar |
| | NASA Land Processes DAAC Surface Data Type Comparison | Chris Doescher |